History Shapes Agriculture

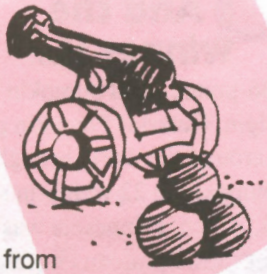
(1860 - 1900)

In your last AgMag, you read about Minnesota's first farmers, the Dakota and Ojibwe Native Americans. As time went on, many things happened that affected agriculture.

The Homestead Act of 1862

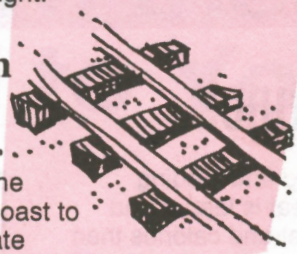
This act of Congress encouraged thousands of people to move west and settle on the prairies. If you were 21 years old and the head of a family, you could claim 160 acres not claimed by someone else. The rules were simple: Pay a small fee, stay on the land for five years and improve it! What do you suppose most settlers tried to do with their land? If you said "Farm it," you're right.

Civil War



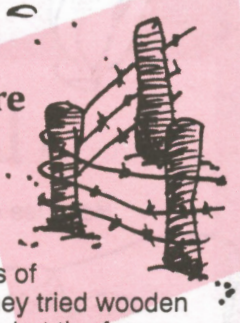
The War Between the States divided our country from 1861 to 1865. Hired helpers and young men from farm families left for war. Who would help with all the work? Many machines were invented to make farm work easier and faster. Farmers began farming bigger and bigger farms as machines helped with the work.

Full Steam Ahead



Railroads crisscrossed the country from coast to coast by the late 1800s. Trains linked cities together. They carried people and supplies into places that had been hard to reach before. More farms were settled. Farm products moved easily from farms and processing centers to towns and cities hundreds of miles away. Farmers begin producing more and more to provide food for the growing nation.

Barbed Wire

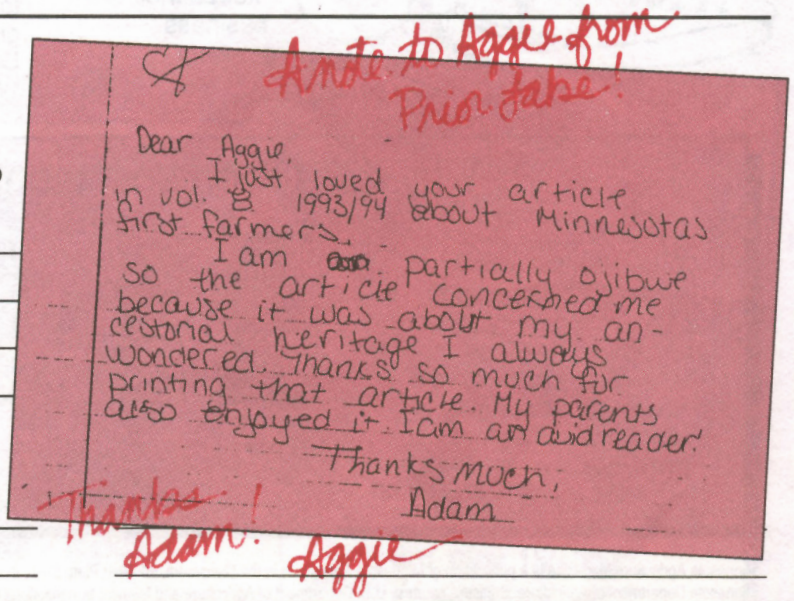


How could farmers protect their crops from being ruined by wandering herds of ranch cattle? They tried wooden and rock fences, but the fences were hard to build and keep repaired. Then Joseph Glidden came up with the idea of barbed wire. The fences interfered with cattle drives and created angry feelings with ranchers who were used to using the whole range. But fences were here to stay.

What do you think?

1. Imagine yourself a settler coming to a new piece of land in 1860. What are at least ten things you'd have to do to live on and farm the land?

2. Early fences were used to keep animals out. What are fences used for today?



History shapes agriculture: 1860-1880

Your last AgMag talked about Minnesota's first farmers, the Dakota and Ojibwe. As time went on, historical events played a big part in shaping agriculture in Minnesota and the nation. Around 1860, big changes were happening. Abraham Lincoln was president. The Civil War was starting. But out of this stormy time came many events and inventions that changed agriculture. Here's a glimpse from the scrapbook.

The Homestead Act of 1862

This act of Congress encouraged farmers to move west to settle the vast prairies. If you were 21 years old and the head of a family, you could claim 160 acres not claimed by someone else. The rules were simple. Pay a small fee, stay on the land for five years, and improve it.

Westward Ho!

The Land-Grant Act of 1862

This new law gave every state 30,000 acres of federal land for each senator and representative it had. The land was to be sold to farmers and settlers. The money was to be used to set up a college in agriculture and mechanical arts for the children of farmers and working class people. The University of Minnesota is our state's land–grant college. Now people could learn more about agriculture and technology. And the donated land itself became new farms for new families who bought it.

Steel Plows

Prairie soil was tough and gummy. It stuck to the rough surfaces of iron and wooden plows. But John Deere came to the rescue with the invention of the smooth, polished steel plow in 1837. By the 1860s, Deere was making enough plows to supply the farmers moving west. The prairie sod became flourishing fields.

Civil War

The War Between the States divided the nation from 1861 to 1865. Hired hands and young men from farm families left for war. There were fewer people to help with farm work. Machines such as reapers and threshers, invented in the 1830s and 1840s, made it possible for less people to do much more work. That was important in working the larger farms of the West.

Barbed Wire

How could farmers fence *in* their crops and fence *out* wandering herds of ranch cattle? Joseph Glidden came up with a solution — barbed wire. Even though the fences interfered with cattle drives and created angry feelings with ranchers, barbed wire farm fences were here to stay. They were great improvements over the wooden or rock fences used earlier.

What do you think?

How might each event encourage moving westward? How did each affect agriculture?

1. The Homestead Act _____

_____

2. The Land–Grant Act _____

_____

3. The steel plow _____

_____

4. The Civil War _____

_____

5. Barbed wire _____

_____

The railroad was also quickly expanding westward at this time. How do you think that affected agriculture and the settling of the West?

_____

History shapes agriculture: 1880 - 1935

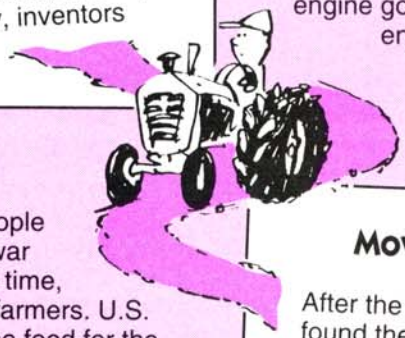
Your last AgMag talked about agriculture during and just after the Civil War. As time went on, machine power, war, the westward movement and the weather all brought big changes to agriculture!

Machine Power: Full Steam Ahead

After the Civil War, machine power for farming kept growing. Early reapers and threshing machines had been powered by horses; now steam power helped. But you had to have a fire and a big tank of water to make steam. Steam engines did a lot of work, but they were awkward and heavy. There must be a better way, inventors thought.

Machine Power: Make Way for Tractors!

In 1892, inventor Rudolph Diesel showed the world his internal combustion engine. The power came from heat (fuel burning) inside the engine itself. You didn't need to build a fire to keep an engine going anymore. With these lighter engines, machinery could be moved and driven much more easily. By 1904, Benjamin Holt had invented a tractor using the new engine. It would change farming forever.



World War I

Along with city folks, young people from farm families went off to war by the thousands. At the same time, there were more demands on farmers. U.S. farms were growing much of the food for the people of Europe. With less help and more need for food, farmers pushed west into Colorado, Montana, Texas, Oklahoma, Nebraska, Kansas. With internal combustion engines, one farmer could farm much more land and do the work of many people.

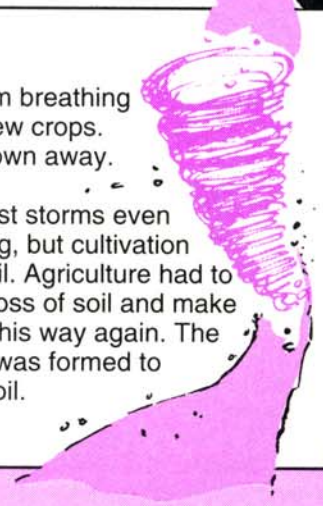
Moving to the Cities

After the war, many young men found they were no longer needed on the farms. Others decided to seek their fortunes in the city anyway. You already know what it means for agriculture when there are more city people (consumers) than producers. And it was just beginning.

Dust Storms

Farmers moving into the semi-arid regions of the central and western U.S. had plowed the land, planted crops where there once was grass and brought in grazing cattle. At the same time, a seven-year drought struck. In May 1934, skies across the nation darkened as black as night in the middle of the day. The first of many huge dust storms hit. Tons of dry soil were carried by the wind as far as the East Coast. Dirt had to be shoveled from houses and barns. Cars and machines were ruined. People got sick from breathing in all the dirt. There were few crops. Much of the topsoil was blown away.

There would have been dust storms even without the western planting, but cultivation had created more loose soil. Agriculture had to find ways to cut down the loss of soil and make sure it wouldn't happen in this way again. The Soil Conservation Service was formed to protect and preserve our soil.



What do you think?

1. Why are more people choosing to live in cities than on farms even today? _____

_____

2. Besides tractors, what other important machines use internal combustion engines? _____

_____

History Shapes Agriculture

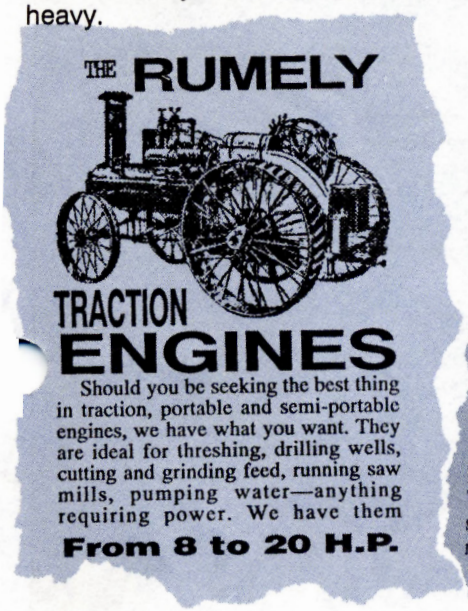
Your last AgMag talked about things that affected agriculture during the last half of the 1800s.

In the early 1900s, machine power was the big news. Check out the ads!

Machine Power

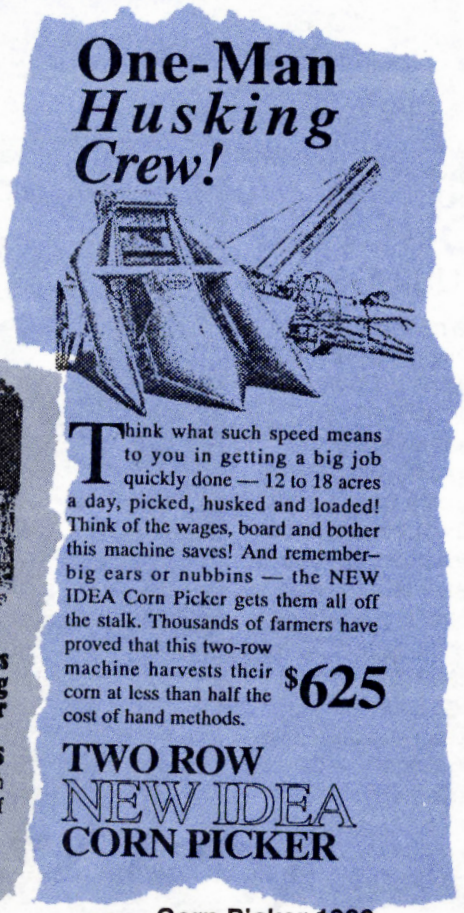
After the Civil War, machine power for farming kept growing with the coming of steam power. Steam engines began replacing horses on heavy jobs. But a fire and a big tank of water were needed to make steam. Steam engines did a lot of work, but they were awkward and heavy.

By the early 1900's internal combustion engines had arrived. The power came from heat (fuel burning) inside the engine itself. You didn't need to build a fire to keep an engine going anymore. Machinery could be moved and driven much more easily. Tractors using the new engines would change farming forever.



Rumely 1900

Allis-Chalmers 1920



Corn Picker 1930

Illustrations Courtesy Minnesota Historical Society and The Farmer Magazine.

Think About It!

1. Why were internal combustion engines better than steam power?

_____

_____

_____

2. The Rumely engine had "From 8 to 20 H.P." What does that mean?

_____

_____

_____

Where do we see those words today?

_____

How do they help customers choose which machine they want to buy?

_____

_____

(Today, some snowblowers and garden tillers are 8 H.P.!)

3. What were three ways the New Idea Corn Picker helped farmers?

_____

_____

_____

4. A farm tractor can cost more than $60,000. How much more is that than the Allis-Chalmers 10-18 model from 1920?

_____

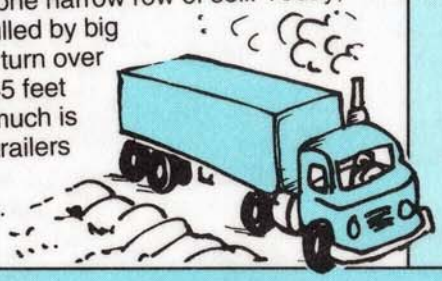
Science and Technology Affect Agriculture

Your last AgMag talked about how machine power, war, the westward movement and the weather changed agriculture.

In the years since World War I, science and technology have lead the way for more big changes!

More Machine Power

In the 1920s and 1930s, many farm people moved to towns and cities to find jobs. As they left, small neighboring farms were often joined together to make larger farms. Less farmers and larger farms meant more work for each farmer. Big, powerful machinery has developed over the years to help with the work. Plows are one example. The first simple plows, pulled by a horse or ox, turned over one narrow row of soil. Today, big plows pulled by big tractors can turn over rows up to 45 feet wide. How much is that? Semi trailers are about 45 feet long.



Fertilizers

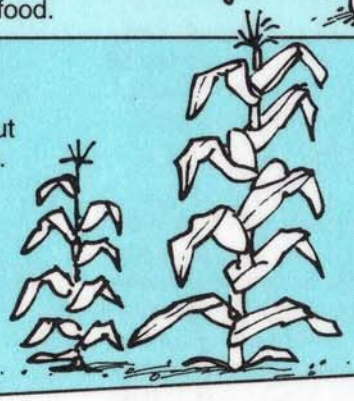
Plants need large amounts of basic elements to grow well. They get most of these elements from the soil. But after many years of growing plants, soils get "tired" and are no longer as rich in elements as they once were. That's where fertilizer helps. Fertilizer adds elements back into the soil to make plants grow better.

The old way to fertilize crops was to spread manure on fields. But as farms got larger and more specialized, that didn't work very well. What do you do if you're a grain farmer? You don't have animals to produce the manure you need for fertilizer. Science and technology developed new fertilizers to help soil grow healthy plants year after year. That means more crops and more food.

Hybrids

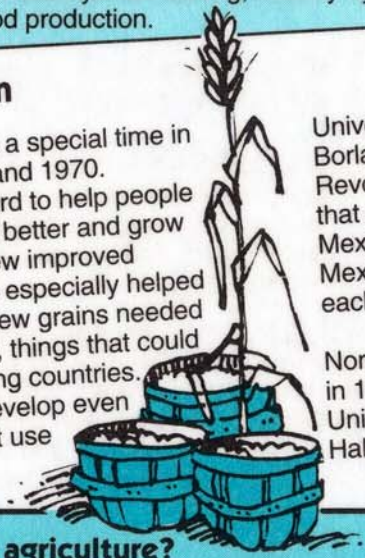
You already know that animals come in different breeds, or varieties. But did you know that plants come in varieties, too? Take corn, for example. One variety of corn may resist diseases well. Another may grow better in cold weather, or in a dry climate. To get better plants, scientists **cross-pollinate** different varieties of plants. Now you have a plant that can both resist diseases and grow in cold weather.

Cross-pollinated plants are called **hybrids.** By the 1950s, many of the crops planted in Minnesota were hybrids. Strong, healthy hybrid plants make a big difference in food production.



The Green Revolution

The Green Revolution was a special time in agriculture between 1960 and 1970. Scientists were working hard to help people in third world countries eat better and grow more of their own food. New improved varieties of wheat and rice especially helped grow more food. But the new grains needed a lot of water and fertilizer, things that could be hard to get in developing countries. So the work went on to develop even more varieties...ones that use less water and fertilizer!



University of Minnesota graduate Norman E. Borlaug was an important person in the Green Revolution. He developed a dwarf variety of wheat that could grow in the dry soil and climate of Mexico, Pakistan and India. Within four years, Mexico was growing three times more wheat on each acre than it had before.

Norman Borlaug received the Nobel Peace Prize in 1970 for his "miracle wheat." Visit the St. Paul University campus today and you can see Borlaug Hall, a plant sciences building named for him!

What's in the future for agriculture?

Science and technology will lead the way. What is one thing you think they should do?_____

_____

_____

Science and Technology Affect Agriculture

Your last AgMag talked about how machine power changed agriculture. In the years since World War I, science and technology have lead the way for more big changes!

More Machine Power

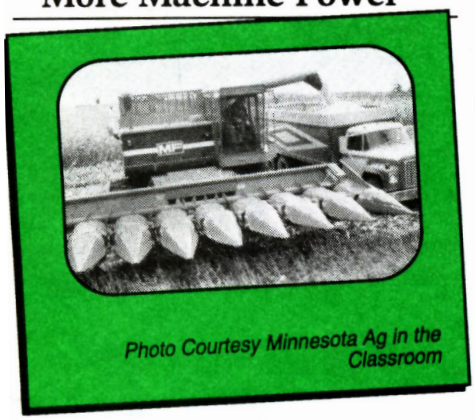


Photo Courtesy Minnesota Ag in the Classroom

In the 1920s and 1930s, many farm people moved to towns and cities to find jobs. As they left, small neighboring farms were often joined together to make larger farms. Less farmers and larger farms meant more work for each farmer. More, powerful machinery was developed to help with the work. This huge corn harvester is one example. Big machines can do a lot of work, but they are expensive. A large tractor today might cost the farmer $150,000.

How much more is that than the 1920 Allis-Chalmers tractor we saw in the last issue for $895.00?

Biotechnology

World population will be 11 billion by the year 2050. To feed so many, agriculture will have to grow more and more food. Biotechnology will help by developing new hybrids and other plants. Scientists put together strong qualities of one variety (like disease resistance) with strong qualities of another variety (like hardiness in dry or cold weather) to make a hybrid. Strong, healthy plants make a big difference in food production.

Photo Courtesy Minnesota Extension Service

How do hybrids help feed hungry nations?

Conservation Tillage

Years ago, most farmers plowed their fields at the end of the growing season. This left long, brown furrows of fresh soil on top of the ground. The field looked nice and neat, but when the winds and rains came, much of the rich topsoil was washed or blown away. That left the soil in poorer condition to grow crops.

Today, many farmers are leaving what remains of last year's crop after the harvest right on the fields to help hold the soil from washing or blowing away. When it's time to plant a new crop, they use machines like this paraplow to knife the soil and break up clumps. Then the new seeds are planted. The new crop grows just fine and the farmer has saved precious soil.

How does conservation tillage help the environment?

Photo Courtesy MN Dept. of Agriculture, Sustainable Agriculture Program

Aggie's Mailbag

Special thanks to J. McCullough's 4th grade class at Fairview Central in Mora, Mrs. Olson's 6th graders at Red Rock Central in Sanborn and D. Bluhm's 6th grade students at Christ's Household of Faith in St. Paul for all the letters! Here are a few of the things they had to say:

My favorite AgMag article was "Machine Power." I live in town but my dad teaches ag and my parents both grew up on farms. Since we have a cat I thought it was interesting to know that new kitty litter was made from wheat.

Linnea
Sanborn

I live on a dairy farm. I have to get up at 5:00 AM to milk the cows. Then I get in, go in the shower, then I get dressed and go to school every day.

Amy
Mora

The part I liked best in the AgMag was the part about "Hands across the globe." I liked it because it talked about how the countries all help each other. I think that if everyone works together we will be able to solve the hunger problems and all the other problems we have. If we worked together we could do almost anything.

Kevin
St. Paul